

### REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 1 through 16 and 18 through 29 remain in this case. Claims 1 through 3, 5, 9, 11 through 13, 16, and 23 through 29 are amended. Claim 17 was previously canceled.

Claims 2 through 9, 12 through 13, 16, and 18 through 29 were objected to because of certain formalities.<sup>1</sup> Claims 2, 5, 12, 16, 23, 24 through 29 are amended as suggested by the Examiner. Applicant submits that this amendment, which is presented to correct the noted informalities, is in no way narrowing nor is presented for any reason related to patentability.<sup>2</sup> No new matter is presented by this amendment to these claims.

Claims 1 through 16 were rejected under §112, ¶1 as not enabled by the specification. The Examiner specifically asserted that, in claims 1 and 11, the specification did not show each demodulating finger as having "a" sample stream input to accept the plurality of sample streams, but instead disclosed that each demodulating finger had three inputs, each accepting one of the sample streams.<sup>3</sup>

Claims 1 and 11 are each amended to now recite that each of the demodulating fingers has sample stream inputs to accept the plurality of sample streams. This amendment to these claims is specifically supported by the specification, as admitted by

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<sup>1</sup> Office Action of November 16, 2004, pages 2 and 3, §2.

<sup>2</sup> See *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722, 62 USPQ2d 1705 (2002), *on remand*, 304 F.3d 1289, 64 USPQ2d 1698 (Fed. Cir. 2002).

<sup>3</sup> Office Action, *supra*, pages 3 and 4, §4.

the Examiner.<sup>4</sup> Applicants respectfully submit that this amendment to claims 1 and 11 overcomes the rejection to those claims, and their respective dependent claims, on this basis.

The Examiner further asserted that claims 3 and 13 were indefinite because the specification does not show each finger channel having a sample stream input connected to the output of the multiplexer. Claims 3 and 13 are each amended to now recite that each finger channel is coupled to the multiplexer output (*i.e.*, indirectly connected via despreading unit 202), as supported by the specification.<sup>5</sup> Applicant submits that this amendment to claims 3 and 13 is in no way narrowing.<sup>6</sup> Applicant respectfully submits that amended claims 3 and 13 and their respective dependent claims meet the requirements of §112, ¶1.

Claims 9, 11 through 16, and 25 through 29 were rejected under §112, ¶2 as indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Various specific bases of indefiniteness were presented by the Examiner relative to certain ones of these claims, with the other claims rejected as dependent on claims so rejected.<sup>7</sup>

Claims 9, 11, and 25 through 28, are each amended to address the specific basis of rejection in each claim. Applicant submits that this amendment to claims 9, 11, and 25 through 28 is in no way narrows any of those claims,<sup>8</sup> and that no new matter is presented by that amendment. Applicant therefore respectfully submits that claims 9, 11 through 16, and 25 through 29 all now meet the requirements of §112, ¶2.

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<sup>4</sup> *Id.*

<sup>5</sup> Specification of S.N. 09/684,886, Figure 6; page 13, lines 14 through 18.

<sup>6</sup> *See Festo, supra.*

<sup>7</sup> Office Action, *supra*, page 4, §6.

<sup>8</sup> *See Festo, supra.*

Claims 1, 5 through 11, 15, 16, and 18 through 29 were rejected under §103 as unpatentable over the Strich et al. reference<sup>9</sup> in view of the Chen et al. reference.<sup>10</sup> The Examiner asserted that, relative to claims 1, 6, 11, and 23, the Strich et al. reference teaches a receiver with, among other elements, multiple demodulators that each receive a plurality of sample streams  $R_i$  and  $R_Q$  "of different users in different sectors/coverage areas".<sup>11</sup> The Examiner found that the Strich et al. reference did not explicitly specify that the data is the soft symbol output, but asserted that the Chen et al. reference teaches a mobile unit with deinterleaving and decoding that provides soft symbols.<sup>12</sup> The Examiner found motivation to combine these teachings for the purpose of soft decoding to decode a punctured coded signal.

Applicant respectfully traverses the rejection, on the grounds that it is based on a misinterpretation of the prior art, specifically the Strich et al. reference.

Claim 1 is directed to a system for demodulating information channels in a plurality of sample streams, comprising a controller having an output to select a sample stream, and a plurality of demodulating fingers, each having sample stream inputs to accept the plurality of sample streams. Each demodulating finger has a selection input connected to the controller output to accept sample stream selection commands, and demodulates information channels to provides soft symbols from the selected sample stream.

The Examiner asserted that the Strich et al. reference teaches that its demodulators 420A through 420C receives the plurality of sample streams from  $R_i$  and  $R_Q$ , allegedly from different users in different sectors or coverage areas transmitted via

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<sup>9</sup> U.S. Patent No. 6,473,447, issued October 29, 2002 to Strich et al., based on an application filed June 28, 1995.

<sup>10</sup> U.S. Patent No. 6,728,323, issued April 27, 2004 to Chen et al., based on an application filed July 10, 2000.

<sup>11</sup> Office Action, *supra*, pages 5 and 6, §8.

multiple transmitting antennas.<sup>13</sup> Applicant respectfully submits that this interpretation of the reference is incorrect, and that none of the demodulating fingers taught by Strich et al. receive a plurality of sample streams, but instead receive only a single sample stream. Figure 10 of the Strich et al. reference clearly shows that each of its data demodulators 420A through 420C receive the same sample stream, consisting of its in-phase and quadrature-phase components  $R_I$ ,  $R_Q$ , respectively. Applicant notes that the reference explains that these I and Q components are comprised of data signals "from a given subscriber unit" as may have been received by two or more antennas, distinguished from one another within the components by a "phase offset".<sup>14</sup> But regardless of the contents of the in-phase and quadrature-phase components  $R_I$ ,  $R_Q$ , these components are but a single sample stream; the demodulating fingers 420A through 420C therefore cannot select from among a plurality of sample streams to determine which to demodulate, nor can the alleged controller 418 control such selection.<sup>15</sup> Rather, each of demodulators 420A through 420C of the reference demodulate the data signals from their respective coverage area by despread the same in-phase and quadrature-phase components  $R_I$ ,  $R_Q$  as applied to the other demodulators 420, presumably by application of the corresponding phase offset for that coverage area.<sup>16</sup> Therefore, the Strich et al. reference fails to disclose a plurality of demodulating fingers that each have sample stream inputs to accept a plurality of sample streams, and a selection input to accept sample stream selection commands, so that the demodulating finger demodulates information channels from a selected sample stream, as required by claim 1.

The Chen et al. reference also provides no teachings in this regard.

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<sup>12</sup> Office Action, *supra*, page 6, §8.

<sup>13</sup> Office Action, *supra*, page 5, last paragraph.

<sup>14</sup> Strich et al., *supra*, column 11, line 60 through column 12, line 9; column 12, lines 41 through 44.

<sup>15</sup> Strich et al., *supra*, column 12, lines 44 through 49.

<sup>16</sup> Strich et al., *supra*, column 12, lines 38 through 55.

Accordingly, Applicant respectfully submits that the combined teachings of the Strich et al. and Chen et al. references, properly interpreted, fall short of the requirements of claim 1 and its dependent claims. For this reason, Applicant respectfully submits that the rejection of claims 1 and 5 through 11 is in error, and traverses the §103 rejection.

Furthermore, Applicant submits that claim 1 and its dependent claims are in fact patentably distinct over the applied references.

As described in the specification,<sup>17</sup> conventional CDMA RAKE receivers must either hardwire the outputs of multiple demodulating fingers, thus constraining the number and order of information channels that are combined, or instead use a downstream CPU or DSP device to use software to combine soft symbols output by the fingers, in which case the demodulation is constrained by computational capacity and bandwidth. In contrast, the system of claim 1 provides a great deal of flexibility in the assigning of sample streams to demodulating fingers, avoiding the constraints of the hardwired systems and not requiring large output bandwidth or significant downstream computational effort.<sup>18</sup> This flexibility is evident from the exemplary receiver arrangements discussed in the specification and shown in the drawings,<sup>19</sup> in which the plurality of demodulating fingers can separately demodulate multiple sample streams, or the same sample stream (including at different multipath delays), as directed by the controller. These important benefits from the system of claim 1 stem directly from the differences between the claimed system and the prior art, specifically the Strich et al. reference, because the ability to flexibly assign sample streams to demodulating fingers derives from the application of the plurality of sample streams to each demodulating finger.

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<sup>17</sup> Specification, *supra*, at page 4, line 21 through page 5, line 16.

<sup>18</sup> See specification, *supra*, page 5, line 17 through page 8, line 6.

<sup>19</sup> Specification, *supra*, Figures 7 through 9, page 14, line 19 through page 16, line 13.

There is no suggestion from the prior art to modify the properly combined teachings of the Strich et al. and Chen et al. references in such a manner as to reach claim 1. This lack of suggestion is especially evident from the system of the Strich et al. reference having the very problem addressed by the invention of claim 1. The similarity of the structure of Figure 10 of the Strich et al. reference with the prior art structure of Figure 2 of this application<sup>20</sup> is especially striking in this regard: each system has three demodulating fingers (data demodulators 420), each receiving the same in-phase and quadrature-phase (I and Q) components of the incoming signal, and each has their outputs combined. But the Strich et al. system (as in the case of the Figure 2 conventional system) discloses no flexibility provided by selecting among a plurality of sample streams to demodulate, as claimed, nor does the reference suggest that such flexibility or selecting would be desirable. The Chen et al. reference, and the other prior art of record in this case, also lend no such suggestion.

Accordingly, Applicant submits that there is no suggestion from the prior art to modify the combined teachings of the Strich et al. and Chen et al. references in such a manner as to reach claim 1. Applicant therefore respectfully submits that claim 1 and its dependent claims are patentably distinct thereover.

Applicant similarly respectfully traverses the rejection of claim 11 and its dependent claims 15, 16, and 18 through 22.

Claim 11 is directed to a demodulating finger in a DSSS communication receiver, comprising sample stream inputs to accept a plurality of sample streams, a selection input to accept sample stream selection commands, and a soft symbol output to provide soft symbols from demodulated information channels in a selected sample stream. The demodulating finger of claim 11 and its dependent claims provide similar advantages

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<sup>20</sup> See also specification, *supra*, page 3, line 13 through page 3, line 2.

as discussed above relative to claim 1, specifically in its flexibility in demodulating a selected sample stream from a plurality of sample streams, thus avoiding the hardwired constraints and overwhelming output bandwidth and downstream computational effort necessitated in conventional receivers.<sup>21</sup>

Applicant respectfully submit that the rejection is in error, because neither of the applied references disclose the sample stream inputs and selection input required in the demodulating finger of claim 11.

As discussed above, and contrary to the assertion by the Examiner,<sup>22</sup> Applicant respectfully submits that the Strich et al. reference does not disclose a demodulating finger that receives a plurality of sample streams. Instead, Applicant submits that each demodulator 420A through 420C of the reference receives only a single sample stream, albeit including both of the in-phase and quadrature-phase components  $R_I$  and  $R_Q$ .<sup>23</sup> Because these components comprise a single sample stream, the disclosed demodulating finger 420 cannot select from among a plurality of sample streams, nor is there any circuitry (e.g., controller 418) that apply sample stream selection commands to the demodulating finger to make such a selection.<sup>24</sup> Instead, according to the reference, each of demodulators 420A through 420C demodulate the data signals from their respective coverage area by despread the same in-phase and quadrature-phase components  $R_I$ ,  $R_Q$  that are applied to the other demodulators 420.<sup>25</sup> Therefore, Applicant respectfully submits that the Strich et al. reference fails to disclose a demodulating finger that has sample stream inputs to accept a plurality of sample streams, and a selection input to accept sample stream selection commands, as required by claim 11. The Chen et al. reference fails to provide any teachings in this regard.

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<sup>21</sup> See specification, *supra*, page 5, line 17 through page 8, line 6.

<sup>22</sup> Office Action, *supra*, page 5, last paragraph.

<sup>23</sup> Strich et al., *supra*, Figure 10.

<sup>24</sup> Strich et al., *supra*, column 12, lines 44 through 49.

Therefore, Applicant respectfully submits that the combined teachings of the applied references fall short of the requirements of claim 11, and that the rejection is in error. Applicant therefore respectfully traverses the §103 rejection of claims 11, 15, 16, and 18 through 22.

Applicant further respectfully submits that claim 11 and its dependent claims are patentably distinct over the prior art of record in this case, because there is no suggestion from the prior art to modify these combined teachings in such a manner as to reach claim 11. As mentioned above, the Strich et al. reference discloses a demodulating system that corresponds, virtually identically, to the conventional demodulating system disclosed in the specification of this application,<sup>25</sup> and as such suffers from the very limitations addressed by the invention of claim 11. Nowhere does the Strich et al. reference itself, nor any of the other prior art of record, suggest that it would be in any way beneficial to modify these teachings to apply multiple sample streams to a demodulating finger, and to then select one of those streams by way of sample stream selection commands applied to a selection input of that finger, as required by claim 11. And especially considering that the important benefits of this invention flow directly from the difference between claim 11 and the prior art, Applicant respectfully submits that the differences are of such substantial importance as to further support the patentability of the claim.

For these reasons, Applicant respectfully submits that claim 11 and its dependent claims are patentably distinct over the prior art of record in this case.

Claims 23 through 29 were similarly rejected under §103 as unpatentable over the Strich et al. and Chen et al. references. Applicant also respectfully traverses the

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<sup>25</sup> Strich et al., *supra*, column 12, lines 38 through 55.

<sup>26</sup> Specification, *supra*, Figure 2, page 3, line 13 through page 3, line 2.



rejection of these method claims, on similar grounds as mentioned above relative to the independent apparatus claims 1 and 11.

The method of claim 23 requires the step of accepting a plurality of sample streams at a demodulating finger, selecting a sample stream from this plurality in response to sample stream selection commands, and then operating the demodulating finger to provide soft symbols from the selected sample stream, resulting in the same important advantages of flexibility in the assigning of multiple sample streams, without hardware or computational complexity constraints, as discussed above relative to claims 1 and 11.

Applicant respectfully submits that the combined teachings of the Strich et al. and Chen et al. references fall short of the requirements of this claim, and traverse the §103 rejection of claims 23 through 29 accordingly.

Applicant respectfully submits that the Strich et al. reference does not disclose the accepting of a plurality of sample streams at a demodulating finger. Rather, the Strich et al. reference discloses applying only a single sample stream (including both of its in-phase and quadrature-phase components  $R_I$ ,  $R_Q$ , respectively) to each demodulator 420A through 420C.<sup>27</sup> Any given demodulating finger 420 in the Strich et al. reference cannot select from among a plurality of sample streams to determine which to demodulate, and therefore the reference necessarily fails to disclose the selecting of a sample stream from a plurality of sample streams, and necessarily fails to disclose the operating of the demodulating finger to provide soft symbols from such a selected sample stream. Instead the reference only discloses that each of its demodulators 420A through 420C demodulate the data signals from the single sample stream that is applied to their input. Applicant therefore respectfully submits that the Strich et al. reference

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<sup>27</sup> Strich et al., *supra*, Figure 10.

fails to disclose the accepting of a plurality of sample streams, fails to disclose the selecting of a sample stream from this plurality of sample streams responsive to sample stream selection commands, and fails to disclose the operating of the demodulating finger to provide soft symbols from the sample stream so selected, all as required by claim 23.

Because the Chen et al reference fails to provide any teachings in this regard, Applicant respectfully submits that the combined teachings of the applied references fall short of the requirements of claim 23. The §103 rejection of claims 23 through 29 is respectfully traversed.

Applicant respectfully submits not only that the rejection is in error, but also that claim 23 and its dependent claims are in fact patentably distinct over the prior art of record in this case, on the grounds that there is no suggestion from the prior art to modify the properly interpreted and properly combined teachings of these references in such a manner as to reach claim 23. This lack of suggestion is evident from the equivalence of the operation of the Strich et al. reference with the conventional demodulating disclosed in the specification of this application as prior art.<sup>28</sup> Accordingly, the conventional method of Strich et al. has the very limitations addressed and overcome by the method of claims 23 through 29; conversely, neither the Strich et al. reference, nor the Chen et al. reference, nor any of the other prior art of record, suggests the modifying of these teachings to accept a plurality of sample streams at a demodulating finger and select therefrom, as required by the method of claim 23. Because the important benefits of this invention flow directly result from the difference between the claim and the prior art, Applicant respectfully submits that these benefits support the patentability of the claims.

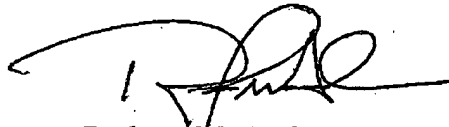
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<sup>28</sup> Specification, *supra*, Figure 2, page 3, line 13 through page 3, line 2.

Applicant therefore respectfully submits that claim 23 and its dependent claims are patentably distinct over the prior art of record in this case.

For the above reasons, Applicant respectfully submits that all claims now in this case are in condition for allowance. Reconsideration of the above-referenced application is therefore respectfully requested.

Respectfully submitted,



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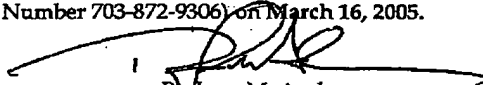
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